

**REMARKS**

This amendment is being filed in response to the Office Action mailed June 23, 2009. No new matter is introduced by this amendment. The amendments to claims 1 and 9-12 are supported by originally filed claims 1 and 9-12, and the specification at paragraphs [0016], [0018], [0027], and [0034]. The amendments to claims 2, 3, 5, and 6 are supported by originally filed claims 2, 3, 5, and 6. The specification is amended to correct an informality. In view of these amendments and remarks this application should be allowed and the case passed to issue.

Claims 1-12 are pending in this application. Claims 1-12 were rejected. Claims 1-3, 5, 6, and 9-12 are amended in this response.

***Information Disclosure Statement***

The Examiner did not initial a Chinese Office Action cited in the Information Disclosure Statement filed April 10, 2008 asserting that an English Translation was not included. According to USPTO PAIR, an English translation of the Chinese Office Action is in the application file. Therefore, it is requested that the Examiner consider the Chinese Office Action and provide an initialed PTO-1449 form indicating consideration of the cited information. For the Examiner's convenience, a copy of the Information Disclosure Statement and the translated Chinese Office Action are attached.

***Objection to the Specification***

The title of invention was objected to as non-descriptive.

In response to this objection, the title has been amended to be more descriptive.

***Claim Rejections Under 35 U.S.C. § 103***

Claims 1-4, 6, and 8-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshida et al. (WO 03/081700).

Claims 5, 7, and 12<sup>1</sup> were rejected under 35 U.S.C. § 103(a) as being unpatentable over Yoshida et al. in view of Hampden-Smith et al. (US 2005/0233203).

These rejections are traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the present invention and the cited prior art.

The Examiner asserted that Yoshida et al. is directed towards a method of forming and apparatus of a membrane electrode assembly comprising hydrogen ion conductive polymer electrolyte membrane, a pair of catalyst layers, arranged on both surfaces of the polymer electrolyte membrane, and a pair of gas diffusion layers. The Examiner averred that Yoshida et al. disclose the carbon cloth for the gas diffusion layer is woven and that the gas diffusion layer is a result effective variable. The Examiner concluded that it would have been obvious to one ordinary skill in the art to vary the thickness of gas diffusion layer. The Examiner relied on Hampden-Smith et al. for teaching gas diffusion layers with varying concentrations of hydrophobicity.

Yoshida et al. and Hampden-Smith et al., whether taken in combination or taken alone, do not suggest the claimed membrane electrode assembly, polymer electrolyte fuel cell, and methods for producing a membrane electrode assembly.

When a fibrous substrate is larger than the catalyst layer, the peripheral portion of the fibrous substrate surrounding the center portion comes into contact with the polymer electrolyte membrane. Thus, when the cell stack is clamped, the asperities of the peripheral portion of the fibrous substrate would damage the surface of the polymer electrolyte membrane. The present invention suppresses such damage of the polymer electrolyte membrane surface by making the peripheral portion of the substrate thinner than the center portion such that  $0.7 \leq T_B/T_A \leq 0.9$  so as

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<sup>1</sup> Claims 5 and 7, and 12 were rejected in two separate rejections.

to reduce the stress exerted on the fibrous substrate (see paragraphs [0016] and [0019] of the specification).

Yoshida et al. fail to disclose or suggest that the gas diffusion layer is larger than the catalyst layer and the peripheral portion of the gas diffusion layer is thinner than the center portion thereof. Further, Yoshida et al. are not aware of the above-mentioned problem of damage of the polymer electrolyte membrane by the surface asperities of the peripheral portion of the gas diffusion layer due to direct contact with the peripheral portion of the gas diffusion layer and the polymer electrolyte membrane. Therefore, one of ordinary skill in the art would not have been motivated to make the peripheral portion of the gas diffusion layer thinner than the center portion thereof in order to reduce the stress exerted on the polymer electrolyte membrane and thereby suppress the surface damage of the polymer electrolyte membrane.

Furthermore, Yoshida et al. does not suggest that in the fibrous substrate, a thickness  $T_A$  of a center portion and a thickness  $T_B$  of a peripheral portion have a relation represented by the following expression:  $0.7 \leq T_B/T_A \leq 0.9$ , as required by claim 1; that a thread diameter  $D_A$  of the center portion and a thread diameter  $D_B$  of the peripheral portion have a relation represented by the following expression,  $D_B < D_A$ , and a thickness  $T_A$  of a center portion and a thickness  $T_B$  of a peripheral portion have a relation represented by the following expression:  $0.7 \leq T_B/T_A \leq 0.9$ , as required by claim 9; a warp and weft thread count  $N_B$  per unit area of the peripheral portion and a warp and weft thread count  $N_A$  per unit area of the center portion have a relation represented by the following expression:  $N_B < N_A$ , and a thickness  $T_A$  of a center portion and a thickness  $T_B$  of a peripheral portion have a relation represented by the following expression:  $0.7 \leq T_B/T_A \leq 0.9$ , as

**Application No.: 10/583,374**

required by claim 10; pressing the peripheral portion, such that a thickness  $T_A$  of a center portion that faces the catalyst layer and a thickness  $T_B$  of a peripheral portion surrounding the center portion have a relation represented by the following expression:  $0.7 \leq T_B/T_A \leq 0.9$ , as required by claim 11; a water repellent concentration  $H_B$  of the peripheral portion and a water repellent concentration  $H_A$  of the center portion have a relation represented by the following expression:  $H_B > H_A$ , and a thickness  $T_A$  of a center portion and a thickness  $T_B$  of a peripheral portion have a relation represented by the following expression:  $0.7 \leq T_B/T_A \leq 0.9$ , as required by claim 12.

Although Yoshida et al. may suggest that the thickness of the gas diffusion layer is a result effective variable, there is no suggestion in Yoshida et al. of a single gas diffusion layer having different thicknesses, such as the thickness of the central portion is being thicker than the peripheral portion, nor that the thread diameter in the center portion is thicker than the thread diameter in a peripheral portion. Furthermore, the cited references do not suggest the unexpected improvements in fuel cells according to the present invention, as evidenced by Fig. 7.

Hampden-Smith et al. do not cure the deficiencies of Yoshida et al.

The dependent claims are allowable for at least the same reasons as claim 1, and further distinguish the claimed invention.

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

**Application No.: 10/583,374**

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT WILL & EMERY LLP



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ITW

Docket No.: 043888-0483

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of	:	Customer Number: 53080
Masaki YAMAUCHI, et al.	:	Confirmation Number: Not Yet Assigned
Application No.: 10/583,374	:	Group Art Unit: Not Yet Assigned
Filed: June 19, 2006	:	Examiner: Not Yet Assigned
For: MEMBRANE ELECTRODE ASSEMBLY, METHOD FOR PRODUCING THE SAME AND POLLYMER ELECTROLYTE FUEL CELL		

**INFORMATION DISCLOSURE STATEMENT**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R. 1.56, 1.97 and 1.98, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached form PTO-1449. It is respectfully requested that the references be expressly considered during the prosecution of this application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is being filed within three months of the U.S. filing date OR before the mailing date of a first Office Action on the merits. No certification or fee is required.

The reference was cited in a Chinese Office Action and its relevance discussed therein.  
A copy of an English language version of the Chinese Office Action is attached for the  
Examiner's information.

Please charge any shortage in fees due in connection with the filing of this paper,  
including extension of time fees, to Deposit Account 500417 and please credit any excess fees to  
such deposit account.

Respectfully submitted,

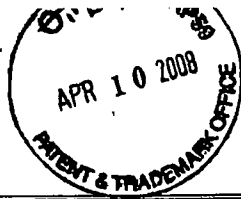
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SHEET 1 OF 1

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Substitute for form 1449/PTO)

ATTY. DOCKET NO.  
**043888-0483**SERIAL NO.  
**10/583,374**APPLICANT  
**Masaki YAMAUCHI, et al.**FILING DATE  
**June 19, 2006**GROUP  
**Not Yet Assigned****U.S. PATENT DOCUMENTS**

EXAMINER'S INITIALS	CITE NO.	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US 2003/0003342 A1	01-02-2003	SUGITA et al.	
		US			
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**FOREIGN PATENT DOCUMENTS**

EXAMINER'S INITIALS	CITE NO.	Foreign Patent Document Country Codes-Number + -Kind Codes (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Figures Appear	Translation Yes No

**OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)**

EXAMINER'S INITIALS	CITE NO.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
		English Translation of Chinese Office Action issued in Chinese Patent Application No. CN 2005800091226, issued on January 18, 2008.

EXAMINER

DATE CONSIDERED

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.



貴所整理番号: P39991-02/SK

弊所整理番号: EPJPL60864

特許出願番号: 2005800091226

## PATENT OFFICE OF THE PEOPLE'S REPUBLIC OF CHINA

Chun LONG,  
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Beijing 100031

Examiner

Seal

Application No.: 2005800091226	Dept. & Type of Notification:	Date of Issue:
Applicant: MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.		January 18, 2008
Title: MEMBRANE ELECTRODE ASSEMBLY, METHOD FOR PRODUCING SAME AND POLYMER ELECTROLYTE FUEL CELL		

## NOTIFICATION OF FIRST OFFICE ACTION (PCT)

- ☒ Applicant requested the substantive examination. In accordance with Paragraph 1 of Article 35 of the Chinese Patent Law, the examiner examined the above-identified patent application for invention.  
☐ In accordance with Paragraph 2 of Article 35 of the Chinese Patent Law, the Chinese Patent Office has decided, on its own initiative, to proceed with the substantive examination of the above-identified patent application for invention.
- ☒ Applicant claims  
JP filing date of October 19, 2004 as the priority date.  
                     filing date of                      as the priority date.
- ☐ The following amended documents submitted by the applicant do not comply with the requirement of Article 33 of the Chinese Patent Law, and thus can not be accepted.  
☐ The amendment under Rule 51 of the Implementing Regulation of the Chinese Patent Law.
- ☐ The examination was conducted on the basis of the Chinese translation of the originally filed International application.  
☒ The examination is conducted on the basis of the following documents:  
☒ Description: Page(s) 1-9, 12-18, 23 of the translation of the originally filed International Application;  
                     Page(s)            of the translation of the Annex to the IPER  
                     Page(s) 10-11, 19-22 of the amendment under Article 28 or Article 41 of PCT  
                     Page(s)            of the amendment under Rule 51 of the Implementing Regulation of the Chinese Patent Law  
☒ Claims: No(s).            of the translation of the originally filed International Application  
                     No(s).            of the translation of the amendment under Article 19 of PCT  
                     No(s).            of the translation of the Annex to the IPER  
                     No(s).            of the amendment under Article 28 or the Article 41 of PCT  
                     No(s). 1-22 of the amendment under Rule 51 of the Implementing Regulation of the Chinese Patent Law  
☒ Drawings: Page(s) 1-4 of the translation of the originally filed International Application;  
                     Page(s)            of the translation of the Annex to the IPER  
                     Page(s)            of the amendment under Article 28 or the Article 41 of PCT  
                     Page(s)            of the amendment under Rule 51 of the Implementing Regulation of the Chinese Patent Law  
☒ The following references are cited in this Notification (The codes of the references will be used in the further examination procedures):

貴所整理番号: P39991-02/SK

弊所整理番号: EPJPL60864

特許出願番号: 2005800091226

Code	Reference No. or Title	Publication Date
1	US2003/0003342A1	(or Filing Date of Conflict Application) January 2, 2003

## 5. Examiner's opinions:

☐ Regarding the Description:

- ☐ the content of the application is not patentable under specified in Article 5 of the Chinese Patent Law.
- ☐ the description does not meet the requirement of Paragraph 3 of Article 26 of the Patent Law.
- ☐ the description does not meet the requirement of Article 33 of the Patent Law.
- ☐ the description does not comply with Rule 18 of the Implementing regulations of the Patent Law.
- ☐ the description does not comply with Rule 19 of the Implementing regulations of the Patent Law.

☒ Regarding the Claims:

- ☐ Claim(s) \_\_\_\_\_ do not possess the novelty under Paragraph 2 of Article 22 of the Patent Law.
- ☒ Claim(s) 1, 4, 6-7, 13-14 do not possess inventiveness under Paragraph 3 of Article 22 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not possess the practical applicability under Paragraph 4 of Article 22 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Paragraph 4 of Article 26 of the Patent Law.
- ☒ Claim(s) (2,9)and(3,10),(5,12)and(8,11) do not meet the requirement of Paragraph 1 of Article 31 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Article 33 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Paragraph 1 of Rule 13 of the Implementing regulations of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Rule 20 of the Implementing Regulations of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Rule 21 of the Implementing Regulations of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Rule 22 of the Implementing Regulations of the Patent Law.
- ☒ Claim(s) 13-17and20 do not meet the requirement of Rule 23 of the Implementing Regulations of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ do not meet the requirement of Paragraph 1 of Rule 4 of the Implementing Regulations of the Patent Law.

Please refer to the text of the Notification for detailed comments of the above opinions.

## 6. Based on the above opinions, the examiner considers that:

- ☐ The applicant should amend the application documents according to the requirements in the text of the Notification.
- ☒ The applicant should state the reasons why the application should be granted for a patent in Response to this Action, and amend the application documents to meet the requirements as pointed out in the text of the Notification. Otherwise, the application may not be granted.
- ☐ The application does not contain any substantive content that may be granted for a patent. If the applicant does not state any reason or if his reason is not persuasive, the application will be rejected.

## 7. Applicant should pay attention to the following items:

- (1) According to Article 37 of the Patent Law, the applicant should submit a response within 4 month(s) from the date of receiving this Notification. If the applicant does not respond, without any justified reason, the application will be deemed withdrawn.
- (2) The amendments to the application documents should meet the requirement of Article 33 of the Chinese Patent Law. The amendment text should be submitted in duplicate and its format shall comply with the relevant provisions of the Examination Guide.
- (3) The Response and/or Amendment documents should be mailed or submitted directly to the Receiving Section of the Patent Office. Otherwise, the submitted documents have no legal effect.
- (4) The applicant and/or attorney may not meet with the examiner if an appointment is not made in advance.

8. The Text of this Notification contains 2 page(s), and has the following annexes:

- ☒ 18 page(s) of 1 copies of the cited reference.